

Applicant: East Union Community School District – SW Region

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Name of Individual Submitting Application: Joan Gordon

Executive Summary

In 500 words or less, summarize the school district's, non-public school system's or accredited, stand-alone non-public school's vision for your Computer Science is Elementary initiative.

“Being a School of Choice in Our Region.” This goal of the East Union Board of Directors includes a vow to propel the goal by “supporting the unlimited interests of our students with varied academic opportunities and partnerships that nurture students’ unique passions and future endeavors.”

With this promise in mind, the Computer Science is Elementary initiative could not arrive at a better time for East Union Elementary. East Union’s transitional kindergarten through fifth grade students already have access to 1:1 Chromebooks with accompanying software and the support of an outstanding technology coordinator. The school also has a well-established system of Core Literacy, Mathematics, Science, and Social Studies instruction with a plan for continuous refinement of curricular units that are aligned to the Iowa Core. All students are also afforded daily scheduled instruction designed to meet varied needs with small group, differentiated learning: a multi-tiered support system. Updated instructional resources are consistently available. East Union Elementary is ready to move beyond these basic curricular offerings; it is time to integrate the *future*.

The vision for the Computer Science is Elementary initiative is threefold:

- Establish foundational keyboarding skills for all students, beginning in second grade.
- Develop and maintain a Computer Science curriculum for students in ALL grade levels. The objectives of the coursework will include programming skills that align with the Computer Science Teachers’ Association K-12 Computer Science Standards. Digital citizenship will be integrated, with an emphasis on online conduct and safety and effective methods of using digital tools for research.
- Develop programming projects or activities for each grade level that creatively apply Core Literacy, Mathematics, Science, and Social Studies standards. Accountability will include standards referenced assessment of completed projects.

Structure, compensation, professional training, and personnel will be provided to develop the curriculum and deliver quality instruction. Collaborative planning and project development can occur during contracted professional development days, and compensation will be available should additional time be needed.

To transform the vision to reality, East Union Elementary has a well-established Teacher Leadership model: the Teacher Advancement Program (TAP). A methodology of observation, feedback, embedded professional development, positive collegial support, and collaborative learning and planning has dramatically elevated best practice teaching methods for ALL teachers in the building. Led by four Master and Mentor Teachers, the TAP process can incorporate professional development

associated with Computer Science. One member of the leadership team is already planning to transition her role to that of a Technology Coach!

The vision must extend beyond East Union Elementary. Computer Science education will influence success as students progress and prepare for college and careers. All East Union students, many of whom are economically disadvantaged, have the opportunity to fulfill the dream of completing coursework at a local community college. The vision includes success for those future students, in a future beyond imagination. The acquisition of resources to initiate Computer Science is Elementary could transform our school into a "School of Choice." What better way to realize the vision for even more children!

Demographics

Points Awarded: / 10

10 points

What is the name of the district, system or stand-alone non-public school making the application?
East Union Community School District

What is the name of elementary school(s) that will participate in Computer Science is Elementary?
East Union Elementary School

What grades does the participant building(s) serve?
Transitional Kindergarten through Grade Five

Provide the name, email address and phone number of the primary lead for the application.
Joan Gordon
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(641) 347-5411 or (641) 344-1291

Provide the name, email address and phone number of the fiscal agent or business manager who will handle reimbursement if awarded.
Rhiannon Tessum
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In what STEM region is the district/system/stand-alone non-public school located? (<https://iowastem.gov/regions>)
Southwest STEM Region

Based on Student Reporting in Iowa (SRI) Oct. 1, 2018, reporting, what percentage of students in the participating elementary school(s) are eligible for free and reduced-price lunch?
66.5%

Based on SRI Oct. 1, 2018, reporting, what percentage of students in participating elementary school(s) are underrepresented populations in the field of computer science (African-American, Hispanic, American Indian/Alaskan, Native Hawaiian/Pacific Islander)?

African American: 2.0%

Hispanic: 6.0%

Native Hawaiian/Pacific Islander and American Indian/Alaskan: 0%

Mixed: 0.5%

Goals and Measurements

Points Awarded: / 20

20 points

What are the measurable goals for the Computer Science is Elementary initiative in the district/system/stand-alone non-public school?

The CSTA Computer Science Standards Five Strands will guide age-appropriate goals. The learner will:

Master programming skills and understand connections between programming and careers (Computational Thinking).

Work collaboratively to use information-gathering and productivity technology to create products that support creative thinking and problem solving (Collaboration).

Use programming resources to create projects that incorporate Core standards (Computing Practice, Programming).

Demonstrate proficiency with keyboarding (Computers, Communication Devices).

Demonstrate understanding of ethical, responsible, accurate, and secure use of technology (Community, Global, Ethical Impacts).

How do these goals tie to the larger district/system/stand-alone non-public school goals, mission, and vision?

Under the broad objective of "Being a School of Choice in Our Region," a district goal is to "set a new collective vision and mission" to meet stakeholders' changing needs. East Union's Board is creating a new vision; what a perfect time to create an innovative Elementary Computer Science curriculum that involves students, staff, and community partners! Showcasing this new program as a participant in the Model Network would certainly attract the attention of families in surrounding areas.

"All students will attain proficiency in literacy and mathematics." Computer Science education reciprocates this TK-5 academic goal when students apply foundational skills to create solutions and products.

How will the district/system/stand-alone non-public school measure the success of the plan using student data, with an emphasis on achievement and engagement?

The plan will be deemed successful if at least 80% of learners attain growth and achievement goals as measured by these assessments:

FAST Screening and Progress Monitoring measure reading and math fluency.

I-Ready Diagnostic and Tutorial Quizzes measure all domains of reading and math.

Standards Referenced Scoring of computer science projects measure mastery of Core standards related to projects.

Engagement will be measured using two methods:

TAP scores for the “Motivation” indicator will be analyzed by TAP teacher leaders following observations of Computer Science lessons.

Student surveys will provide feedback on their perception of instruction. Valuing students’ opinions sustains engagement!

Plan

Points Awarded: / 40

40 points

Describe how the plan will be launched or built upon an existing computer science education in the proposed participating elementary school(s).

Digital learning is a source of pride for East Union Elementary. ALL students use 1:1 Chromebooks and other devices on a daily basis. Online tutorials and assessments are integral parts of differentiation, and these lessons are aligned to daily Core Literacy and Math instruction. Fourth and fifth graders use Google forms to complete required Core subject area assignments. These projects are intentionally planned for students to demonstrate mastery of Core standards; they are referenced in the school-wide Rubicon Atlas Curriculum Mapping program.

Online learning is also available for all students through a variety of simulations, games, and resources associated with basic curricular materials. The school’s technology coordinator maintains availability of these resources through the Clever portal, so that young learners have access to unlimited learning with safety limits in place.

While elementary students can proficiently use many resources involving computers, the one area that *is* currently limited is their understanding of how and why computers and other devices work as they do! So, with resources already in place, now is the time to expand learning to levels beyond imagination by launching Computer Science instruction.

Prior to the first year of implementation, a core committee, the Computer Science Team, will launch the process by researching and selecting keyboarding and coding programs to be piloted in grades four and five. This team will include the four TAP teacher leaders, two more elementary teachers from the district Technology Team, the technology coordinator, the school librarian, and the elementary principal. This work would be done in August, so teachers will be compensated for time served outside of contract days. The work would also include developing fourth and fifth grade Computer Science curriculum units with learning goals aligned to the CSTA Computer Science Standards. Units will be mapped using the Rubicon Atlas program. The Loess Hills Elementary Blueprint may be used as a guide for this process.

During contracted professional development days prior to the beginning of the school year, all teachers will receive professional development on keyboarding instruction, led by the TAP Team. Time would be built into the schoolwide schedule for instruction to take place in third, fourth, and fifth grade. Following a first semester pilot, the committee will revisit the effectiveness of keyboarding instruction with a goal of including transitional kindergarten through second grade students during the second semester.

Coding and digital citizenship will be piloted during the first year of the initiative, as part of DAILY Computer Science instruction for fourth and fifth graders. With three total sections of these grade levels, all three teachers will deliver Literacy and Social Studies instruction to their home rooms. Then, one teacher will be responsible for Math instruction for each class, another for Science, and the third teacher would pilot Computer Science instruction. The Computer Science teacher happens to be a member of both the TAP Teacher Leadership Team AND the district Technology Team. This teacher is very interested in transitioning her teacher leadership role to that of a technology coach; what an exciting way to integrate a new curriculum with action research, effective instruction, and collegial inspiration!

Impact

Sub-Section Points Awarded: / 10

What is the plan for computer science instruction by July 1, 2020?

East Union Elementary has a well-established interconnecting system of instructional improvement with teacher leadership support, Core curriculum development and refinement, and accountability for student achievement through carefully aligned assessments. The development of a Computer Science curriculum with instructional plans and assessments is the next logical step in elevating teaching and learning in the school.

By July 1, 2020, the plan to establish keyboarding instruction for all grade levels and daily Computer Science instruction, including coding, digital citizenship, and college and career readiness for fourth and fifth grade students will have been piloted. At least one-third of the teaching staff will have spent the pilot year selecting resources, writing a curriculum that includes community involvement, delivering instruction, participating in training opportunities and site visits, and providing professional development for all staff members. During June of 2020, the Computer Science Team will have developed a TK-3 Computer Science curriculum to be launched in the 2020-2021 school year.

Computer Science instruction will include keyboarding, coding, digital citizenship, and college and career readiness. Intentionally planned lessons will allow opportunities for guest instructors, speakers, and partners from within our school and our community to become involved. Time will be allotted during contracted professional development days for curriculum development and lesson planning and preparation. Further support for the Computer Science teacher may be offered through training workshops, technology conferences, and site visits to schools with an established Computer Science curriculum. In time, coding projects will be integrated with activities and assessments that measure mastery of Core Mathematics, Science, and Social Studies standards, with application of Core Literacy skills.

Members of the Computer Science Team will also be afforded the opportunity to attend technology workshops and conferences, and potentially even be compensated for completing coursework associated with Computer Science instruction. Other teachers will also get their turn to take advantage of these types of professional development activities in anticipation of expansion of the first year pilot.

One day per quarter will be set aside for the Computer Science Team members to be released from teaching duties to review the effectiveness of the fourth and fifth grade pilot, assist the Computer Science teacher with unit development, and begin planning for expansion of coding and digital citizenship instruction for the lower grades in Year Two.

Publicizing East Union Elementary's model Computer Science program will be an important link to the vision of "Being a School of Choice in Our Region" during Year One of the initiative. Community Computer Science Nights, student-created advertising in local newspapers, social media posts, school website links, and guest appearances by students on local radio talk shows, such as Creston's KSIB "Grapevine," would be ways to spotlight the exciting work being done by East Union's staff members and students. Planning of these events could even be incorporated into the actual Computer Science curriculum.

Does the plan build on existing computer science instruction or launch a first-time initiative?

The plan for Computer Science instruction is a first-time initiative. While East Union Elementary students can proficiently use many, many resources involving computers, the one area that *is* currently limited is their understanding of how and why computers and other devices work as they do. With many resources already in place, including 1:1 Chromebook access for all students, Computer Science instruction would elevate learning to a dimension beyond the basic Core Curriculum offerings.

The initiative will include daily Computer Science instruction in keyboarding, coding, and digital citizenship for all fourth and fifth grade students (Year One and Two), and weekly Computer Science instruction in coding and digital citizenship for transitional kindergarten through third grade students (Year Two). Keyboarding instruction will be launched during the second semester of Year One for all TK-3 students.

Will computer science be integrated into other subjects or delivered as a stand-alone discipline?

During the first two years, Computer Science will be scheduled to be taught as a stand-alone discipline. This, however, does not preclude teachers from developing projects or activities that include coding or college and career connections. Since East Union Elementary learners already use digital tools such as Google Docs, Slides, and Sheets and many online resources for research and instructional tools, digital citizenship would naturally be integrated and applied as students complete Core subject area assignments, assessments, or other activities.

During the second year, all teachers will be expected to integrate at least two coding projects into existing Core Mathematics, Science, or Social Studies units. These projects will be assessed using standards-referenced grading tools. Professional development will be provided, and time will be allotted during contracted professional development days for teachers to work collaboratively to select or create coding projects.

What grade level(s) of students and teachers will be included initially?

During the first year, all fourth and fifth grade students will receive daily Computer Science instruction in a departmentalized format. A fourth grade teacher, who is also a member of the TAP Leadership Team and the district Technology Team, will teach this newly developed curriculum. Computer Science instruction will include coding, digital citizenship, keyboarding, and community involvement with an emphasis on college and career readiness. Time will be included in the schoolwide schedule for third grade students to also receive keyboarding lessons. At mid-year, the effectiveness of keyboarding instruction will be evaluated with the goal of including scheduled time for transitional kindergarten through grade two students to begin keyboarding during the second semester of the first year. TK-3 keyboarding lessons will be proctored by the school librarian.

Also during the first year, a committee of six teachers, the technology coordinator, the school librarian, and the elementary principal (The Computer Science Team) will be tasked with selecting

resources, developing units aligned with the CSTA K-12 Computer Science Standards, attending training, visiting model Computer Science Schools, and providing embedded professional development for ALL staff members through the TAP process. All staff members are encouraged to seek learning opportunities beyond that which is offered during contracted professional development days. Compensation will be available for Computer Science Team members so that work can be done during August of 2019. Compensation will be available for Computer Science coursework or training completed by any interested staff member.

What is the plan for expansion to all students in all grades in your school?

Flexibility must be allowed for Year Two plans to unfold, pending the course of the Year One pilot. During June of 2020, the Computer Science Team will again be compensated for time spent refining, developing, and solidifying a Computer Science curriculum for grades TK-5. Computer Science units will be mapped using the Rubicon Atlas online curriculum program, so that all teachers will have access to all grade levels' units by the fall of 2020.

During the 2020-2021 school year, the Computer Science teacher will continue to enact daily Computer Science instruction for all fourth and fifth grade students. This teacher will also serve as a TAP Teacher Leader Technology Coach for all staff members. For the lower grades, it is anticipated that the school librarian and another member of the Computer Science team will be allotted time in their schedules to deliver weekly direct instruction on coding and digital citizenship to students in grades TK-3. Forty minutes each week would be designated for Computer Science instruction for lower elementary learners. The curriculum with unit plans will have been developed, resources will have been purchased, and time for lesson planning will be provided during contracted professional development days so that these two teachers can collaboratively prepare lessons for respective TK-3 grade levels.

Meanwhile, the daily fourth and fifth grade Computer Science course will be continuously refined so that projects completed during Computer Science can be integrated with Core instruction in other subject areas. Grade level team collaboration is an established practice for East Union Elementary, and release time is already available for this purpose. The teacher responsible for departmentalized Computer Science instruction would be able to plan activities and projects that measure mastery of Core Science, Social Studies, and Mathematics standards in collaboration with the fourth and fifth grade teacher teams.

While three teachers will be primarily responsible for delivering stand-alone TK-5 Computer Science instruction, all teachers will be expected to integrate at least two Computer Science projects into Core Mathematics, Science, or Social Studies units. These projects will be assessed using standards-referenced grading tools.

The Computer Science Team will continue to enact training on coding and digital citizenship for the entire staff during contracted professional development days. All teachers will be afforded the opportunity to attend workshops, conferences, or complete coursework associated with Computer Science instruction, with compensation. Teachers will also be able to visit schools with successful Computer Science programs in place. The Computer Science Team will again be provided with one day per quarter to evaluate the effectiveness of the Computer Science program, refine curriculum (including activities and assessments that integrate coding with Core subject areas), and plan professional development for the staff.

Teachers' learning opportunities combined with time spent refining a high-quality, carefully mapped curriculum will establish a momentum that will carry the Computer Science initiative beyond June of 2021. Computer Science instruction and learning will be the new "norm" at East Union Elementary!

Curriculum

Sub-Section Points Awarded: / 10

What is the plan to identify, revise or write high-quality computer science curriculum aligned to the Iowa Computer Science Standards, 21st Century Skills, Universal Constructs and career exploration?

The Iowa Core Computer Standards are the Computer Science Technology Association Standards. Computer Science instruction will be completely aligned to many of the CSTA Standards. The East Union Technology Team has already approved the following measurable instructional goals with alignment to the CSTA Standards noted:

Strand 1: Computational Thinking

- Grades TK-2: The learner will recognize that software is created to control computer operations by completing age-appropriate projects that demonstrate understanding of ordering, sorting, and solving problems. (L1:3.CT 3 and 4)
- Grades 3-5: The learner will master computer programming skills, such as understanding instructions, data, and syntax that guide programming. (L1:6.CT 1, 2, and 3)
- Grades TK-5: The learner will understand connections between programming and careers. (L1:6.CT 6)

Strand 2: Collaboration

- Grades TK-2: The learner will work with peers, teachers, and others to use technology to gather information. (L1:3.CL 1 and 2)
- Grades 3-5: The learner will work collaboratively to use productivity technology (word processing, spreadsheets, presentation software) to create programs and products that support creative thinking and problem solving. (L1:6.CL 1, 2, and 3)

Strand 3: Computing Practice and Programming

- Grades TK-2: The learner will construct sets of statements that can be acted out to accomplish a relevant task. (L1:3.CPP 4)
- Grades 3-5: The learner will use online programming resources to create projects that incorporate content area standards (Science and/or Social Studies). (L1:6.CPP 5 and 6)
- Grades TK-5: The learner will identify a wide range of jobs that require knowledge of programming. (L1:3.CPP 5 and L1:6.CPP 9)

Strand 4: Computers and Communication Devices

- Grades TK-5: The learner will demonstrate age-appropriate proficiency with keyboarding. (L1:3.CD 1 and L1:6.CD 1)

Strand 5: Community, Global, and Ethical Impacts

- Grades TK-5: The learner will demonstrate age-appropriate understanding of ethical, responsible, and secure use of technology and information. (L1:3.CI 1 and 2 and L1:6.CI 1 and 2)

- Grades 3-5: The learner will evaluate the accuracy, relevance, appropriateness, comprehensiveness, and biases that occur in electronic information sources. (L1:6.CI 3)

In August of 2019, Computer Science Team members will be compensated for creating fourth and fifth grade Computer Science unit plans using the online Rubicon Atlas Curriculum Mapping Program. The units will guide daily lesson planning for the Computer Science teacher. Teaching resources for keyboarding and coding will be researched and selected. Community partners, including but not limited to those identified in the Computer Science is Elementary grant application, will be contacted and plans will be initiated for integration of college and career exploration. Related employability skills, as defined by 21st Century Core Standards, will be identified in curriculum maps. Partners within East Union's high school, also identified in the grant, may be included in curriculum development, with compensation available for their time. In June of 2020, team members will again be compensated for expanding the curriculum plans to all grade levels, following the described format. It is expected that time will be allotted during contracted days for continuous curriculum refinement as the program is developed. The Loess Hills Elementary Blueprint may be used as a guide for this process.

Professional Learning

Sub-Section Points Awarded: / 10

What is the plan for professional learning in years one (fiscal year 2020) and two (fiscal year 2021), including participants, providers, timeline, instructional pedagogy, curriculum connections, alignment to Iowa standards and school community/employer partner connections?

East Union's learning-centered pedagogy is supported by well-established professional development (PD) practices. Professional learning focuses on instructional areas where the most refinement is needed, and it has been discovered through the TAP process that these areas are "Thinking" and "Problem Solving." The incorporation of Computer Science standards into instruction will give teachers a timely opportunity to create lessons that involve analytical, practical, creative, and research-based thinking, and problem-solving types including abstraction, predicting outcomes, improving solutions, generating ideas, and creating and designing. Creating and enacting a Computer Science curriculum fits the current need, but teachers will need time and training to do this successfully.

Year One:

August of 2019: The Computer Science Team will spend three days prior to the beginning of the school year researching and selecting keyboarding and coding programs, and creating unit plans for fourth and fifth grade Computer Science. Programs such as Kodable, Tynker, or Code.org provide self-paced, online learning modules that can be explored during this time. The Rubicon Atlas online program will be used to create unit maps. Units will be aligned to the CSTA standards related to the goals of this initiative. School and community partners will be contacted to plan for integration of college and career ready activities and lessons. Plans for training for the entire staff will be created and delivered by the team. One day of pre-service professional development will be used for introductory training for the entire staff on keyboarding and coding programs, and digital citizenship. 2019-2020: East Union already schedules eight hours per month for PD, two hours of which will be designated for Computer Science. All teachers will explore selected coding programs and develop projects to be integrated into Core subject areas during Year Two. PD may be provided by the selected coding company. Also, the Computer Science Team will be given one day per quarter of release time to review and refine current instruction and plan monthly PD.

Year Two:

June 2020: The Computer Science Team will develop TK-3 units, designed for weekly lessons. The fourth and fifth grade units will be refined. Resources will be selected, and PD for all staff members will be planned for August pre-service days.

2020-2021: PD will follow the same format as Year One.

Both Years: PD opportunities offered to all staff members include, but are not limited to the following:

Attending ITEC (Iowa) and NETA (Nebraska) conferences

- Completing online coursework with compensation through ISEA Academy, Drake PLS, Green Hills AEA, Heartland AEA
- Obtaining International Society of Technology Education memberships
- Visiting model Computer Science schools

In addition, one staff member may be compensated for completing an online Iowa Computer Science Teacher endorsement through Northwestern College.

Should East Union Elementary receive the Computer Science is Elementary grant, it is anticipated that a larger percentage of the funds will be used for training, coursework, collaboration, and compensation for teachers to develop a Computer Science is Elementary Model School. This would be the most responsible use of the funding, because the skills and learning that can be applied to developing curriculum and delivering effective instruction can never, ever be taken away from the teachers.

Community Engagement

Sub-Section Points Awarded: / 10

How will the community be engaged?

Should East Union Elementary be awarded the Computer Science is Elementary grant, the first step for community engagement will be publicity! By publicizing its good fortune, East Union will advertise its status as a participant in the Computer Science is Elementary Model Network...one more way to showcase "Being a School of Choice in Our Region."

One of the partners interested in making the career connections within the intended curriculum also happens to co-own the local newspaper: *The Afton Star*. Wayne Hill's personal involvement with the project will lend an interesting flavor to an article for the school's "official" weekly newspaper. *The Creston News Advertiser* is a daily publication that could also be contacted to publish the story. The school website and Facebook page are viral vehicles for publicizing the new program. Students and teachers could also reserve a spot on "Grapevine," a local radio talk show that Creston's KSIB radio broadcasts twice each week.

The next step in engaging the community involves inviting people to come into the school. The first opportunity will arrive during "Back to School Night," during which families visit classrooms and meet teachers just prior to the first day of school. The Computer Science teacher and other staff members will be able to explain the new coursework, and even have demonstration sample programs available for an interactive experience in every classroom.

East Union's parent-teacher-student involved conferences are led by the students. Nearly 100% of the families attend conferences, which take place in October and March; this represents a large portion of the community! By October, students will be able to share new Computer Science learning as part of the conversation. By March, completed projects will bring that conversation to life!

The community members who have committed themselves to partnering with East Union for the Computer Science is Elementary project will naturally be engaged as resource people (either live or virtual) who provide intentionally planned instructional support. Partnering with existing East Union high school organizations and their sponsors/teachers, such as Mike Cooley's Computer Assisted Drafting and FFA students, Adam Triggs' Innovative Science students, and Angela Hartman's Gamers' Club, will create links within and beyond the school because these organizations also have

community connections. Southwestern Community College is already planning to engage its students, faculty, and alumni to guest-lecture or lead computer-science based career-exploration centered activities in classrooms...the ripple effect of community engagement continues. Field trips, either live or virtual, to partners' colleges or businesses would reciprocate engagement.

One more way to involve the community would be to host Computer Science Nights. Planning of these events could be incorporated into the actual Computer Science curriculum. Students would present projects and share information about their coursework, and partners would be invited to represent businesses or colleges.

A meaningful way to recognize community partnerships and engagement would again involve publicity. Using the aforementioned venues, partners could be publicly recognized and thanked for their commitment. Partners are committed because they care about students' future success, as well as the success of the school. The offering of their time and talents deserves acknowledgement.

How will parents and a broader stakeholder group be involved in planning and implementation of the Computer Science is Elementary initiative?

Initial planning will take place in August of 2019. The Computer Science Team will select resources and develop units with daily lessons that are aligned to CSTA standards for fourth and fifth grade students. Parent and stakeholder involvement will be a natural outcome of this process.

Units will include intentionally planned college and career readiness lessons, with connections made to the CSTA and Iowa Core 21st Century Employability Skills standards. It will be necessary for the Computer Science Team members to contact stakeholders who have made partnership commitments so that those resource people can understand their role in the delivery of instruction, and make plans for activities that would best integrate college and career exploration. Within the school, at least three high school teachers have pledged to support the Computer Science initiative by creating partnerships with courses they teach and activities they sponsor. These teachers could be compensated for joining the Computer Science team for a day during the unit development process.

Some of the committed partners employ East Union parents. Southwestern Community College and Long and Sons Limousin Cattle are two examples, and it is anticipated that parent employees will be involved with Computer Science instruction as resource people; therefore, they would also be included in the initial planning process. As the Computer Science program evolves, there is potential for even more parents to take part.

The publicity associated with the possible grant funding will include information about the Computer Science is Elementary initiative, and it will also include an invitation. Any parent or stakeholder with an interest in Computer Science will be invited to join committed partners in this endeavor. Once again, social media, the school website, newspaper articles, radio talk shows, "Back to School Night," and notes sent home in weekly communication folders will be vehicles for sharing information and inviting families and stakeholders to become involved. It will be exciting to discover the knowledge and talents that new partners can bring to share with our staff and students!

Who are or will be the community/employer partner(s) and what is the shared vision for engagement?

East Union Elementary students and teachers will be honored to work with the following partners that have pledged commitment to the Computer Science is Elementary program:

Southwestern Community College (SWCC): A long-standing East Union partner, SWCC has made it possible for economically disadvantaged high school students to complete coursework with the goal of an AA degree. Connecting with elementary students by educating them about computer literacy is a natural progression in the partnership. SWCC staff members, students, and alumni plan to lead science-based, career-exploration activities in classrooms. SWCC is also working to create a Computer Science Programming Languages certification. This and other SWCC AA degrees represent computer science related career preparedness opportunities for future students.

Buena Vista University (BV): Buena Vista's teacher preparation candidates may select area schools in which to complete observations, supervised participation, and student teaching. East Union Elementary has hosted many BV students from its Creston site. The unique, exciting, and forward-thinking opportunity for teacher candidates to practice their craft in a model Computer Science School would provide "stand out" resume information for potential employers, and enhance the quality of the existing partnership.

The Learning Center: Based in Creston, the center offers after school and summer tutoring for Union County children who need additional learning supports. The shared vision for partnership would include the use of lesson plans, resources, and possibly personnel to incorporate Computer Science lessons with summer offerings.

Long and Sons Cattle Company: Proprietor Sarah Long, a former East Union Science teacher, will use "Ag Chat" or a similar virtual venue to deliver interactive lessons that make connections between programming technology and agricultural applications.

BSM Enterprises: Located in Arispe, this company uses computer technology for fabricating metal products. Resource people can present information, and a field trip to the factory will bring students to the career!

Wayne Hill, Representing *The Afton Star*: Mr. Hill is the resource person with over 50 years of experience using programming in industry. He will share historical connections to current computer science applications with relevant examples for young learners.

East Union Secondary Teachers:

Mike Cooley, Ag Science/FFA Advisor. Mr. Cooley plans to launch a Partners in Active Learning Support (PALS) program, partnering Ag and FFA students with elementary special needs learners. Computer Science lessons would provide a venue for building these relationships. Computer Assisted Drafting students could also make connections between their learning and that of the elementary students.

Adam Triggs, Science. Mr. Triggs teaches Innovative Science; part of this curriculum includes programming 3D printing, robotics, and Lego League. His students could plan activities that align with those being taught to elementary students.

Angela Hartman, Gamers Club Advisor. This is a future extra-curricular offering for students interested in gaming. A collaborative lesson with club members would address digital citizenship standards with relevance for younger learners.

Potential partners may include Bunn-o-Matic; Iowa Select; and United Farmers Cooperative, all businesses based in the East Union district.

All applicants must have at least one community/business partner. Please include at least one signed letter of commitment (in PDF format) on employer letterhead from a community/business partner. Up to 10 employer letters may be added. This must be done in order for the application to be considered complete.

The following partners have contributed letters of commitment for this project: Southwestern Community College, Buena Vista University, The Learning Center, and Long and Sons Cattle Company.

Budget

Points Awarded: / 20

20 points

Please include the amount and a brief explanation of the use of funds per cost category not to exceed \$50,000 over two years. Allowable expenditures may include the following categories:

Budget Category	Award Funding Amount	Year 1	Year 2	Uses of Funds
Professional Learning	\$14,160	\$9592	\$4568	<p>Year 1:</p> <p>Nebraska Education Technology Association (NETA) Conference for eight teachers: \$1984.10.</p> <ul style="list-style-type: none"> \$149 x 8 = \$1192.00 for registration fees \$134.66 x 5 = \$673.30 for substitute teachers (Substitute pay is \$115 per day plus FICA at 7.65% and IPERS at 9.44%) \$0.54 per mile x 220 miles (Round trip to Omaha, NE) <p>Iowa Technology & Education Connection (ITEC) Conference for eight teachers: \$1274.30.</p> <ul style="list-style-type: none"> \$65 x 8 = \$520.00 for registration fees \$134.66 x 5 = \$673.30 for substitute teachers (Substitute pay is \$115 per day plus FICA at 7.65% and IPERS at 9.44%) \$0.54 per mile x 150 miles (Round trip to Des Moines) <p>ISEA Academy Coursework for 11 teachers: \$1309.00 (1 credit hour at \$119.00). Course options are "Technology for Student Learning" or "Technology for Today's Classroom." These will also count toward recertification.</p> <ul style="list-style-type: none"> \$119.00 x 11 = \$1309.00 <p>Computer Science Endorsement for 1 Teacher: \$5025.00.</p> <ul style="list-style-type: none"> Northwestern College in Orange City, IA offers a 15 credit hour program (\$335 per credit). Coursework may apply to Master of Education Degrees.

				<p>TOTAL YEAR 1: \$9592</p> <p>Year 2: Nebraska Education Technology Association (NETA) Conference for eight teachers: \$1984.10.</p> <ul style="list-style-type: none"> • \$149 x 8 = \$1192.00 for registration fees • \$134.66 x 5 = \$673.30 for substitute teachers (Substitute pay is \$115 per day plus FICA at 7.65% and IPERS at 9.44%) • \$0.54 per mile x 220 miles (Round trip to Omaha, NE) <p>Iowa Technology & Education Connection (ITEC) Conference for eight teachers: \$1274.30.</p> <ul style="list-style-type: none"> • \$65 x 8 = \$520.00 for registration fees • \$134.66 x 5 = \$673.30 for substitute teachers (Substitute pay is \$115 per day plus FICA at 7.65% and IPERS at 9.44%) • \$0.54 per mile x 150 miles (Round trip to Des Moines) <p>ISEA Academy Coursework for 11 teachers: \$1309.00 (1 credit hour at \$119.00). Course options are “Technology for Student Learning” or “Technology for Today’s Classroom.” These will also count toward recertification.</p> <ul style="list-style-type: none"> • \$119.00 x 11 = \$1309.00 <p>TOTAL YEAR 2: \$4568</p>
Curriculum Development	\$17,189	\$14,495	\$2694	<p>Year 1: August 2019:</p> <ul style="list-style-type: none"> • Compensation for 7 teachers to spend three non-contract days developing a TK-5 Computer Science curriculum and selecting resources at \$30 per hour plus FICA at 7.65% and IPERS at 9.44%: 3 days x 8 hours x \$30 = \$720. \$720 + \$55.08 + \$67.97 = \$843.05 per person x 7 = \$5901.35. <p>2019-2020 School Year:</p> <ul style="list-style-type: none"> • Substitutes for 5 teachers for 4 days (1 per quarter) for release time to develop curriculum and plan professional development: \$134.66 x 5 x 4 = \$2693.20. (Substitute pay is \$115 per day plus FICA at 7.65% and IPERS at 9.44%.) <p>June 2020:</p> <ul style="list-style-type: none"> • Compensation for 7 teachers to spend 3 non-contract days refining the TK-5 Computer Science curriculum and selecting resources at \$30 per hour plus FICA at 7.65% and IPERS at 9.44%: 3 days x 8 hours x \$30 = \$720. \$720 + \$55.08 + \$67.97 = \$843.05 per person x 7 = \$5901.35. <p>TOTAL YEAR 1: \$14,495</p> <p>Year 2: 2020-2021 School Year:</p> <ul style="list-style-type: none"> • Substitutes for 5 teachers for 4 days (1 per quarter) for release time to develop curriculum and plan professional development: \$134.66 x 5 x 4 = \$2693.20. (Substitute pay is \$115 per day plus FICA at 7.65% and IPERS at 9.44%.) <p>TOTAL YEAR 2: \$2694</p>
Site Visits	\$3956	\$1978	\$1979	<p>Year 1: Two Site Visits, not to exceed 400 miles round trip:</p> <ul style="list-style-type: none"> • \$0.54 per mile x 400 x 2 = \$432.00.

				<ul style="list-style-type: none"> Substitutes for 5 teachers for 2 days: $\\$134.66 \times 5 \times 2 = \\1346.00 (Substitute pay is \$115 per day plus FICA at 7.65% and IPERS at 9.44%.) Meal Allowance = $\\$20 \times 5 \text{ teachers} \times 2 \text{ days} = \\200. <p>TOTAL Year 1: \$1978</p> <p>Year 2: Two Site Visits, not to exceed 400 miles round trip:</p> <ul style="list-style-type: none"> $\\$0.54 \text{ per mile} \times 400 \times 2 = \\432.00. Substitutes for 5 teachers for 2 days: $\\$134.66 \times 5 \times 2 = \\1346.00 (Substitute pay is \$115 per day plus FICA at 7.65% and IPERS at 9.44%.) Meal Allowance = $\\$20 \times 5 \text{ teachers} \times 2 \text{ days} = \\200. <p>TOTAL Year 2: \$1978</p>
District Costs	\$13,155	\$5780	\$7375	<p>Year 1:</p> <ul style="list-style-type: none"> Kodable Beginner Course License: \$1500.00 Tynker Complete License: \$2600.00 FIRST LEGO League Set: 18 kits, including materials for 72 students (Grades 4 and 5): \$955.00 Materials for 3 LEGO League tables: \$225.00 Food and supplies for Computer Science Night featuring LEGO League Expo: \$500.00 <p>TOTAL YEAR 1: \$5780</p> <p>Year 2:</p> <ul style="list-style-type: none"> Kodable Beginner Course License: \$1500.00 Tynker Complete License: \$2600.00 FIRST LEGO League Set: 18 kits, including materials for 72 students (Grades 4 and 5): \$955.00 Ozobots Classroom Set (18 bots): \$1200.00 Bloxels Classroom Kit with 50 student accounts (Grades 2 and 3): \$250.00 Mileage to Villisca, Iowa for regional FIRST LEGO League Competition: $\\$337.25$ (95 miles \times \$3.55 per mile) Food and supplies for Computer Science Night: \$532.85 <p>TOTAL YEAR 2: \$7375</p>
Staffing Support	0	0	0	
Other Costs	\$1540	\$770	\$770	<p>Year 1: Nebraska Educational Technology Association Memberships for 22 teachers: $\\$35 \text{ per member} \times 22 = \\770.00.</p> <p>TOTAL YEAR 1: \$770.00</p> <p>Year 2: Nebraska Educational Technology Association Memberships for 22 teachers: $\\$35 \text{ per member} \times 22 = \\770.00.</p> <p>TOTAL YEAR 2: \$770.00</p>
Cost Sharing	\$300,866	\$150,043	\$150,823	<p>Year 1:</p> <ul style="list-style-type: none"> East Union General Fund: \$2800 for Rubicon Atlas Curriculum Mapping Program East Union SAVE Funding: \$86,750 for TK-5 Technology East Union General Fund: \$10,500 for TK-5 Technology East Union General Fund: \$24,692.57 for TK-5 share of Technology Coordinator's salary

				<ul style="list-style-type: none"> East Union Teacher Leadership Compensation Funding: \$25,000 for TLC positions (To provide PD for staff) East Union PTO: \$300.00 for local field trips to business partners' locations <p>TOTAL YEAR 1: \$150,043</p> <p>Year 2:</p> <ul style="list-style-type: none"> East Union General Fund: \$2800 for Rubicon Atlas Curriculum Mapping Program East Union SAVE Funding: \$86,750 for TK-5 Technology East Union General Fund: \$10,500 for TK-5 Technology East Union General Fund: \$24,692.57 for TK-5 share of Technology Coordinator's salary East Union Teacher Leadership Compensation Funding: \$25,000 for TLC positions (To provide PD for staff) East Union PTO: \$300.00 for local field trips to business partners' locations and \$781.00 for trip to Ames, Iowa for LEGO League Championship <p>TOTAL YEAR 2: \$150,823</p>
TOTAL	\$50,000	\$32,615	\$17,385	Totals do not include in-kind cost sharing or funding from other education streams.

The expectation for the Computer Science is Elementary award is that the plan uses primarily existing school revenue sources to execute a plan. After year two of the award, what is the plan for sustainability using existing or any additional funding sources?

Learning is something that can never, ever be taken away. Should East Union Elementary be awarded the Computer Science is Elementary grant, a larger percentage of this funding will be used for professional development, curriculum development and refinement, and site visits to schools in which successful computer science programs exist. The estimated costs associated with these three categories, all of which are associated with teacher training and learning, total \$35,304.90. This figure represents 71% of the \$50,000 budget.

The remaining 29% will need to be sustained following Year Two of the award. When one examines the current figures under "Cost Sharing," it is apparent that East Union is committed to maintaining a viable technology budget, funding for curriculum development, and, depending upon legislation, funding for teacher leader salaries that support current, well-established, embedded professional development.

East Union will maintain the hardware needed to sustain a model Computer Science elementary school. There are other potential funding sources available to purchase licenses for coding programs and other devices specifically selected for Computer Science instruction. Keeping in mind that Computer Science integrates all subject areas, Early Literacy Funding can be used to cover a percentage of software costs. East Union Elementary is a school-wide Title I building, so Title I funds may also purchase a portion of the software as it supports application of literacy and math skills. East Union's curriculum budget is another source of funding. The elementary principal will continue to seek grant opportunities that can supplement the Computer Science curriculum. Though the Computer Science is Elementary grant proposal does not request financial support from any of the committed partners, there is potential for a donation of resources. East Union also allocates funding for professional development beyond the Teacher Leadership Compensation program, so teachers will be able to continue to seek learning associated with Computer Science.

Should East Union Elementary be awarded the Computer Science is Elementary grant, staff members, students, families, and community partners will proudly represent the school as members of the Computer Science is Elementary Model Network. The opportunity is greatly appreciated.

Computer Science is Elementary Model Network

Points Awarded: / 10

10 points

To be eligible for the award, participation in the Computer Science is Elementary Model Network is necessary. By checking this box, the district/system/stand-alone non-public school is willing to participate in a Computer Science is Elementary Model Network including, but not limited to, hosting visits and sharing best practices, challenges, opportunities and successes with colleagues across the state.

I agree




To Whom It May Concern:


I am writing in support of the "Computer Science Is Elementary" grant application from East Union Schools. After speaking with Joan Gordon, elementary principal, I feel that this would be a great partnership. Buena Vista University has a long-standing, successful partnership with East Union Schools as placement location for student teachers in our School of Education. While completing student teaching placements, as well as various field experiences, our BVU students have gained a wide variety of skills associated with differentiation, collaboration, technology, and curriculum design. The plans that Joan has shared associated this grant would enhance all of these strong skills and allow our BVU students additional opportunities to be prepared to teach students in our increasingly technology-focused world.

As a model computer science school, East Union will provide a unique, exciting, and forward-thinking opportunity for BVU teacher candidates to observe, complete supervised participations, student teach, and have something on resumes that would "stand out" to potential employers. The computer science curriculum will also attract new teachers to the East Union School District. BVU School of Education Mission Statement is "We prepare teacher leaders for a changing world." The pre-service teachers would definitely have an opportunity to embrace this mission by working in a model computer science school.

We value the partnership with the East Union School District and are very excited for this opportunity for their students and our BVU pre-service teachers. Please feel free to contact me at 712-749-1999 for any additional information.

Sincerely,


Stacy Gibbs
Executive Director
Online & Site Programs


Dr. Jill Tussey
Division Chair, School of Education
Literacy, Early Childhood and TESL



The Learning Center of SW Iowa

"We believe everyone can learn"

March 13, 2019

To Whom It May Concern:

I am writing on behalf of The Learning Center of SW Iowa in strong support of funding for the Computer Science is Elementary Grant for, East Union Elementary School, through the Governor's STEM Advisory Council.

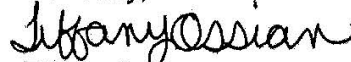
The Learning Center (TLC) is a non-profit tutoring center for students in kindergarten-12th Grade. We are based in Creston and offer tutoring in Math and Reading. TLC offers after school and summer tutoring for Union County and surrounding children who need additional learning support. The shared vision for partnership would include the use of lesson plans, resources, and personnel to incorporate Computer Science lessons with summer offerings.

East Union Elementary has quality instruction with 1 on 1 student to devices. Together we believe that Computer Science and skills are the key to moving East Union Elementary School into the future. This grant will allow just that; continuing to build a strong foundation and ensure the students are well prepared for higher education and in their professional lives.

Our vision at TLC is: We believe all children can learn. Children with learning differences can succeed, learning gaps can be closed. Parents of children with learning differences need support. **Children win when schools, parents and community organizations create strong partnerships.**

Thank you for considering East Union Elementary for this amazing grant opportunity that The Learning Center supports 100%.

Sincerely,



Tiffany Ossian

Executive Director/TLC

tlctossian@gmail.com

(641)782-3849

1715 W. Prairie St. Ste. A

Creston, Iowa 50801

www.tlciowa.com

LONG & SONS CATTLE COMPANY

William, Sarah, Riley, Peyton, Emmet and Maria Long

2251 Kingfisher Avenue, Afton, Iowa 50830

Phone: 641-782-3770

Website: www.longandsonscattle.com Email: longlino@wildblue.net

March 11, 2019

To Computer Science is Elementary Grant Selection Committee:

We write this letter as a community partner in support of Principal Mrs. Joan Gordon and the East Union Community School District's application to receive one of the Computer Science is Elementary grants to be awarded in Summer 2019.

We are life-long residents of Union County and are actively engaged in production agriculture (cattle, corn and soybeans). In October of 2016, we collaborated with Union County's County Youth and Outreach Coordinator for Iowa State University Extension and East Union Community School to provide an "Ag Chat" to fourth grade students. During the weekly "Ag Chat" sessions, we interacted "live" with students in the classroom from our soybean field and the cab of the combine. Although the East Union School District is in a rural, agriculture dominated community, many of the students are not connected to a farm or agriculture. Months after our "Ag Chat", students were still enthused about the experience, remembered information, and asked new questions. Technology certainly made this experience possible!

We endorse the East Union Community School District's application to receive a Computer Science is Elementary grant, and furthermore wholeheartedly commit to be a community partner. We understand the grant will provide funding for schools to teach and apply computer science skills needed in today's workplace. As a community partner and computer science advocate, we are enthusiastic about the opportunity to showcase the role of computer science and technology on our farm including, but not limited to, instantaneous yield calculating on the combine, GPS mapping during planting, and calculation of EPDs (Expected Progeny Difference) for our cattle. Data guides decision-making and profitability, so systems for collecting, organizing and formatting data is essential. We believe our agricultural "expertise" and the integration of computer science and technology in our livelihood would be of interest to all students, regardless of whether or not they have a farm or agriculture connection, and certainly would provide opportunities for exploring potential careers.

We look forward to continuing to work with East Union Community Schools as we advocate for agriculture and assist in making connections between curriculum and the "real world". East Union Community Schools has been and continues to be an innovative district that strives to provide a challenging and engaging curriculum to meet the needs of individual learners while preparing them for success in the world.

Sincerely,



William and Sarah Long, owners
Long and Sons Cattle Company



March 8, 2019

The Governor's STEM Advisory Council
University of Northern Iowa
214 East Bartlett Hall
Cedar Falls, Iowa 50614-0298

Dear Governor's STEM Advisory Council,

Please consider this correspondence as a formal statement of support and commitment for Southwestern Community College to serve as a community partner for East Union Community School District's pursuit of an *Iowa STEM Computer Science is Elementary* grant. Southwestern and East Union have a rich history of working diligently to create sustainable, education-based partnerships. These partnerships are designed to prepare middle school and high school students for post-secondary and career readiness. Therefore, an opportunity to connect and educate East Union elementary students about computer science literacy is a natural progression of the two educational entities' partnership, and provides educational benefits to both East Union and Southwestern students.

In collaboration with East Union's prospective *Computer Science is Elementary* grant, Southwestern is committed to engaging its students, faculty, and alumni to guest lecture or lead computer science-based, career exploration-centered activities in the elementary classrooms. These prospective opportunities include involving Southwestern's information technology faculty members and/or students to carry out a coding lesson in an East Union elementary classroom utilizing the college's Lego robotics kits. Another prospective opportunity may include relying on the expertise of students enrolled in Southwestern's AGC 315 Leadership in Agriculture course to plan and present a global positioning system (GPS) lesson to students in East Union's elementary classroom to emphasize the role of computer science technology in agriculture today. Using this format, not only do East Union elementary students benefit from the opportunity to connect the use of computer science to real world careers, Southwestern's students are able to develop or enhance their leadership skills. In addition to engaging Southwestern's faculty and students in the East Union computer science initiative, there are also opportunities to showcase East Union and Southwestern alumni who utilize technology in their everyday life and connect them to the East Union elementary students. Furthermore, East Union and Southwestern will work diligently to identify individuals who are employed in careers who are nontraditional for their gender (e.g., women in the computer science field) and promote these career opportunities to students.

In addition to the early intervention strategies described above, Southwestern Community College is committed to enhancing its computer science-related programming for concurrent enrollment students. The college is currently investigating the creation of a computer science programming languages certificate. The courses identified for this certificate are already embedded within the college's information technology systems networking program and will include 15 college credits. While there are

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Creston, IA 50801
Ph: 641.782.7081
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Osceola Center
2520 College Drive
Osceola, IA 50213
Ph: 641.342.3531
Fax: 641.342.3627

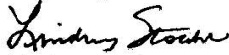
Red Oak Center
2300 N. 4th Street
Red Oak, IA 51566
Ph: 712.623.2541
Fax: 712.623.4534

www.swcciowa.edu

a number of program approval steps to be completed, I am hopeful Southwestern will be able to offer this certificate effective for the 2019-2020 academic year. This certificate will provide students (including concurrent enrollment students) with a foundation in programming, and allow a student to matriculate full-time into the information technology systems networking or management information systems programs. This prospective concurrent enrollment opportunity illustrates one more opportunity to connect East Union students with computer science/technology educational resources at Southwestern. In 2018, approximately 70 percent of the East Union senior class participated in concurrent enrollment with the average senior earning more than a semester's worth of college credit.

For the reasons outlined above, it is with great confidence Southwestern Community College is committed to serve as a community partner for East Union Community School District's pursuit of an *Iowa STEM Computer Science is Elementary* grant. We are eager and excited to partner together to provide this opportunity.

Sincerely,



Lindsay Stoaks
Assistant Vice President of Instruction
Southwestern Community College

Reviewer Name:

Reviewer Signature:

Total Points Awarded:

/100